CLAIMS

1. A method of screening for and/or diagnosis of breast, lung and/or pancreatic cancer in a subject and/or monitoring the effectiveness of breast, lung and/or pancreatic cancer therapy, which method comprises the step of detecting and/or quantifying in a biological sample obtained from said subject:

(i) an NKCC1 polypeptide which:

a) comprises or consists of the amino acid sequence shown in Figure 1 (SEQ ID NO:1);

b) is a derivative having one or more amino acid substitutions, modifications, deletions or insertions relative to the amino acid sequence shown in Figure 1 (SEQ ID NO:1) which retains the immunological or biological activity of NKCC1; or

c) is a fragment of a polypeptide having the sequence shown in Figure 1 (SEQ ID NO: 1), which is at least ten amino acids long and has at least 70% sequence identity over the length of the fragment; and/or

(ii) a nucleic acid molecule which:

d) comprises or consists of the DNA sequence shown in Figure 1 (SEQ ID NO:2) or its RNA equivalent;

e) is a sequence which codes for a polypeptide as defined in a), b) or c);

f) is a sequence which is complementary to the sequences of d) or e);

g) is a sequence which codes for the same polypeptide, as the sequences of d) or e);

h) is a sequence which shows substantial identity with any of those of d), e), f) or g), or

i) is a fragment of d), e), f), g) or h), which is at least 8 nucleotides in length.

2. The method of claim 1, wherein the level of said polypeptide or said nucleic acid is compared to a previously determined reference range or control.

3. The method according to claim 1 or 2, wherein the step of detecting comprises:

(a) contacting the sample with a capture reagent that is specific for a polypeptide as defined in claim 1(i); and

(b) detecting whether binding has occurred between the capture reagent and said polypeptide in the sample.

4. The method according to claim 3, wherein step (b) comprises detecting the captured polypeptide using a directly or indirectly labelled detection reagent.

5. The method according to claim 3 or 4, wherein the capture reagent is immobilised on a solid phase.

6. An antibody, functionally-active fragment, derivative or analogue thereof, that specifically binds to a polypeptide as defined in claim 1(i).

7. The method according to claim 1, wherein the NKCC1 polypeptide is detected and/or quantified using an antibody that specifically binds to the polypeptide.

8. An antibody according to claim 6 or the method of claim 7, wherein the antibody is monoclonal, polyclonal, chimeric, bispecific, humanised or is conjugated to a detectable substance, therapeutic moiety, a second antibody or a fragment thereof, a cytotoxic agent or a cytokine.

9. A diagnostic kit comprising a capture reagent specific for an NKCC1 polypeptide as defined in claim 1(i), reagents and instructions for use.

10. A method for the prophylaxis and/or treatment of breast, lung and/or pancreatic cancer in a subject, which comprises administering to said subject a therapeutically effective amount of:

i) a polypeptide as defined in claim 1(i), or

ii) a nucleic acid molecule as defined in claim 1(ii).

11. A method for the prophylaxis and/or treatment of breast, lung and/or pancreatic cancer in a subject, which comprises administering to said subject a therapeutically effective amount of an antibody as defined in claim 6 or 8.

12. The use of:

i) a polypeptide as defined in claim 1(i), or

ii) a nucleic acid molecule as defined in claim 1(ii),

in the preparation of a composition for use in the prophylaxis and/or treatment of breast, lung and/or pancreatic cancer.

13. The use of an antibody as defined in claim 6 or 8 in the preparation of a composition for use in the prophylaxis and/or treatment of breast, lung and/or pancreatic cancer.

14. i) a polypeptide as defined in claim 1(i), or

ii) a nucleic acid molecule as defined in claim 1(ii),

for use in the prophylaxis and/or treatment of breast, lung and/or pancreatic cancer.

15. An antibody as defined in claim 6 or 8, for use in the prophylaxis and/or treatment of breast, lung and/or pancreatic cancer.

16. The use as claimed in claim 12, wherein the composition is a vaccine.

17. The method of claim 10 or the use of any one of claims 12, 14 or 16, where the nucleic acid inhibits the expression of the polypeptide as defined in claim 1(i).

18. A method of screening for agents that interact with a polypeptide as defined in claim 1(i), said method comprising:

(a) contacting said polypeptide with a candidate agent; and

(b) determining whether or not the candidate agent interacts with said polypeptide.

19. The method according to claim 18, wherein the determination of interaction between the candidate agent and the polypeptide comprises quantitatively detecting binding of the candidate agent and said polypeptide.

20. A method of screening for anti-breast, pancreatic and/or lung cancer agents that modulate

i) the expression or activity of a polypeptide as defined in claim 1(i), or

ii) the expression of a nucleic acid molecule as defined in claim 1(ii),

said method comprising:

a) comparing the expression or activity of said polypeptide or the expression of said nucleic acid molecule, in the presence of a candidate agent with the expression or activity of said polypeptide or the expression of said nucleic acid molecule, in the absence of the candidate agent or in the presence of a control agent; and

b) determining whether the candidate agent causes the expression or activity of said polypeptide or the expression of said nucleic acid molecule, to change.

21. The method of claim 20 wherein the expression or activity level of said polypeptide or the expression level of said nucleic acid molecule is compared with a predetermined reference range.

22. The method of claims 20 or 21 wherein step b) additionally comprises selecting an agent which modulates the expression or activity of said polypeptide or the expression of said nucleic acid molecule, for further testing or therapeutic or prophylactic use as an anti-breast, lung and/or pancreatic cancer agent.

23. An active agent identified by the method of any one of claims 18 to 22 which interacts with said polypeptide or causes the expression or activity of said polypeptide or the expression of said nucleic acid molecule, to change.

24. The use of an active agent which interacts with a polypeptide as defined in claim 1(i), which modulates the expression or activity of said polypeptide or which modulates the expression of a nucleic acid as defined in claim 1(ii) in the manufacture of a composition for the prophylaxis and/or treatment of breast, lung and/or pancreatic cancer.

25. An active agent which interacts with a polypeptide as defined in claim 1(i), which modulates the expression or activity of said polypeptide or which modulates the expression of a nucleic acid as defined in claim 1(ii), for use in the prophylaxis and/or treatment of breast, lung and/or pancreatic cancer.

26. A method of prophylaxis and/or treatment of breast, lung and/or pancreatic cancer, which comprises administering to said subject a therapeutically effective amount of an active agent which interacts with a polypeptide as defined in claim 1(i), which modulates the expression or activity of said polypeptide or which modulates the expression of a nucleic acid as defined in claim 1(ii).